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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,839	03/13/2002	Michael Thomas Sherwood	USA.302	4993

7590 04/28/2003
James E. Curry
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EXAMINER

BARR, MICHAEL E

ART UNIT PAPER NUMBER

1762

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,839

Applicant(s)

SHERWOOD ET AL.

Examiner

Michael Barr

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-15 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. The applicant's response, filed 3/31/2003, has been acknowledged. In accordance with the response, Claims 16-23 have been canceled. Claims 1-15 are pending.
2. Applicant's election with traverse of Claims 1-15 in Paper No. 4 is acknowledged. The traversal is noted, however the applicant's arguments are moot since the non-elected claims have been canceled.

Drawings

3. The drawings are objected to because there is only a single figure and it is labeled as "Fig. 1". Where only a single view is used in an application to illustrate the claimed invention, it must not be numbered and the abbreviation "Fig." must not appear (see MPEP 608.02). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui in view of Menhennett et al.

Fukui teaches coloring a three-dimensional polymer object by immersing or spraying the object with a solution containing a sublimable dye while heating at an elevated temperature, which would have been above the glass transition temperature of the polymer in order to permeate the polymer object with the dye and thus color the object (Col. 3, line 51-Col. 4, line 66). Fukui teaches that the polymer object can include a polyester resin, acrylates, polycarbonate, polyurethane, and ABS resin (Col. 2, lines 30-61). Fukui teaches applying the dye to only a portion of the object to form designs and characters (Col. 3, lines 22-51). Fukui teaches that the dye colorant can be black (Example).

Fukui does not teach that the object is formed by a solid freeform fabrication apparatus. Menhennett et al. teaches forming three dimensional polymer objects by selective deposition modeling, where the polymer objects can be of the same materials used by Fukui (Col. 10, lines 30-63; Claim 1). It would have been obvious to one skilled in the art to use the method and means for forming the three-dimensional object described by Menhennett et al., to form the polymer object of Fukui, with the expectation of forming the desired polymer object to be colored, since it is shown by Menhennett et al. that such a method and means are known and conventional to form and produce polymeric objects of a desired shape, which are inclusive of those used by Fukui.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui and Menhennett et al. as applied to claim 1 above, and further in view of Oka et al.

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Fukui and Menhennett et al. do not teach the claimed fluid medium in the dye solution. Oka et al. teaches a solution of a sublimable dye for coloring a polymer material, where the solution solvent is an alcohol (Col. 3, lines 33-44). It would have been obvious to one skilled in the art to substitute the alcohol solvent for that of Fukui and Menhennett et al., in the sublimable dye solution, with the expectation of providing the desired polymer coloring, since it is shown by Oka et al. that alcohol is a suitable for sublimable dyes used for coloring polymers, as is the desire of Fukui.

7. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukui and Menhennett et al. as applied to claim 1 above, and further in view of KR 2002012819 by Jang et al. ("Jang").

Fukui and Menhennett et al. do not teach the claimed fluid medium in the dye solution. Jang teaches a solution of a sublimable dye for coloring a polymer material, where the solution solvent is a fatty acid ester such as linseed oil (Abstract). It would have been obvious to one skilled in the art to substitute the fatty acid ester solvent, such as linseed oil, for that of Fukui and Menhennett et al., in the sublimable dye solution, with the expectation of providing the desired polymer coloring, since it is shown by Jang that a fatty acid ester, such as linseed oil, is a suitable for sublimable dyes used for coloring polymers, as is the desire of Fukui.

Allowable Subject Matter

8. Claims 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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9. The following is a statement of reasons for the indication of allowable subject matter:
- The prior art cited or reviewed by the examiner fails to teach or fairly suggest the claimed process where the infiltrant is conductive or phosphorescent.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hamada et al. and Tanaka et al. are cited as prior art of interest.

Hamada et al. teaches PBT has a glass transition temperature of 20-40 °C.

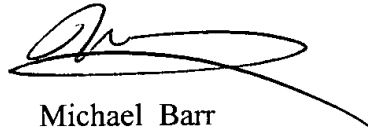
Tanaka et al. teaches coloring a plastic by immersion of the plastic in a solution and heating to infiltrate the colorant into the plastic.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Barr whose telephone number is 703-305-7919. The examiner can normally be reached on Monday-Thursday 6:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 or 703-305-5408 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Michael Barr
Primary Examiner
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MB
April 14, 2003